

CLAIMS:

1. A high-frequency band pass filter for GHz band, which comprises an input signal line and an output signal line both made of conductive material strips disposed in serial direction with a gap on a surface of a magnetic loss sheet made by dispersing soft magnetic metal powder in a polymer matrix, a capacitance means connecting both the opposite ends of the signal lines, and a GND line disposed on the reverse surface of the sheet, characterized in that the low-cut characteristics are determined by choosing the electrostatic capacity of the capacitance means, that the high-cut characteristics are determined by choosing impedance of the input line and the output line, and the magnetic loss of the magnetic loss sheet, and that the passing band is determined by combination of the low-cut characteristics and the high-cut characteristics.

2. A high-frequency band pass filter for GHz-band, which comprises an input signal line 2 and an output signal line 3 both made of conductive material strips disposed in serial direction with a gap on a surface of a magnetic loss sheet 1 made by dispersing soft magnetic metal powder in a polymer matrix, a capacitance means connecting both the opposite ends of the signal lines, and a GND line 4 disposed on the reverse surface of the sheet, characterized in that a chip condenser 5 is used as the capacitance means, that the low-cut characteristics are determined by choosing the electrostatic capacity of the condenser, that the high-cut characteristics are determined by choosing impedance given by the length, width, thickness and shapes of the input line 2 and the

output line 3, and the magnetic loss given by the shapes and filling factor of the soft magnetic metal powder in the matrix, and the shape and thickness of the sheet, and that the low-cut characteristics and the high-cut characteristics are combined to determine the passing band.

3. A high-frequency band pass filter for GHz-band, which comprises an input signal line 2 and an output signal line 3 both made of conductive material strips disposed in serial direction with a gap on a surface of a magnetic loss sheet 1 made by dispersing soft magnetic metal powder in a polymer matrix, a capacitance means connecting both the opposite ends of the signal lines and a GND line 4 disposed on the reverse surface of the sheet, characterized in that electrostatic capacity is formed by disposing an internal line 7 made of another conductive strip on the input signal line 2 and the output signal line 3 with intermediation of an insulating film 6 in such a manner that the internal line bridges the input signal line and the output signal line, that the low-cut characteristics are determined by the capacitance, and the high-cut characteristics are determined by choosing impedance given by the length, width, thickness and shapes of the input signal line 2 and the output signal line 3, and the magnetic loss given by the shapes and filling ratio of the soft magnetic metal powder in the matrix, and the shape and thickness of the sheet, and that the passing band is determined by combining the low-cut characteristics and the high-cut characteristics.

4. A band pass filter for GHz-band according to one of claims

2 and 3, characterized in that the area of overlapping part of input signal line 2 and the internal line 7, and the area of overlapping part of output signal line 3 and the internal line 7 are chosen respectively to control the electrostatic capacitance formed by the respective condensers, thereby to determine the band pass characteristics and/or notching characteristics.

5. A band pass filter for GHz-band according to claim 4, characterized in that the widths of the signal lines and the internal line are identical, that the lengths of the overlapping part of input signal line 2 and the internal line 7, and the lengths of the overlapping part of output signal line 3 and the internal line 7 are chosen respectively to control the electrostatic capacitance formed by the respective condensers, thereby to determine the band pass characteristics and notching characteristics.

6. A band pass filter for GHz-band according to one of claims 1 to 4, characterized in that, as the soft magnetic metal powder, powder having an averaged particle size of at largest 30 μ m of a metal selected from the group of Sendust, Fe, Fe-Si alloys, Fe-Ni alloys, Fe-Co alloys, Fe-Cr alloys, Fe-Cr-Al alloys and Fe-Cr-Si alloys is used.

7. A band pass filter for GHz-band according to one of claims 1 to 4, characterized in that the magnetic loss sheet 1 is formed by using as the synthetic resin for the matrix one selected from the group of nylon, polyphenylene sulfide, epoxy resins and liquid crystal polymers and that the mixture of the soft magnetic metal

powder and the synthetic resin is injection-molded into a sheet of a certain size.

8. A band pass filter for GHz-band according to one of claims 1 to 4, characterized in that the magnetic loss sheet 1 is prepared by dispersing the soft magnetic metal powder into a thermosetting liquid polymer and letting the polymer liquid set to the sheet.

9. A band pass filter for GHz-band according to one of claims 1 to 4, characterized in that the signal lines and the internal line are formed by etching a flexible substrate, pattern printing of conductive ink, or plating or sputtering a metal.